Health impacts of Household Energy use in developing countries: implications for setting international standards

Dr Nigel Bruce
Department of Public Health and Policy, University of Liverpool &
Department of Public Health and Environment, WHO
Lack of access to clean, safe energy in the home

No electricity:
Lighting with crude kerosene wick lamp

No access to clean fuels:
Cooking (heating) with wood on an open fire
Lack of access to clean, safe energy in home:
Indicator: solid fuel use (SFU) for cooking


3 billion people; 42% of homes
How does this energy access situation impact health?

• Cooking and heating with solid fuel:
  – Traditional stoves → poor combustion
  – High levels of ‘household air pollution’
  – High risk of burns and scalds

• 1.3 billion have no electricity
  – Use candles, kerosene for lighting
  – High levels of pollution
  – High risk of burns, house fires

• Fuel collection: injuries and violence

• Women and young children most affected
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| Household air pollution (HAP)    | • Child pneumonia  
• Chronic obstructive lung disease (COPD)  
• Lung cancer (coal)                  | 1.96 million premature deaths (2004)     |
| Injuries                        |                                                      |                                          |
## Health consequences

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| Injuries                     | • Burns and house fires  
                               • Scalds  
                               • Poisoning (kerosene)  
                               • Injuries in fuel collection | High % of 300,000 annual burns deaths, plus severe injuries |
Implications ... for child pneumonia, we need to get down to lower levels of exposure with cleaner technologies, in order to obtain major health benefits.
Relationship between emissions and exposure

- Emissions
  - Chimney
  - Home
- Ventilation
- Room size
- Time:
  - Inside
  - Outside
- Neighbours
WHO Indoor air quality guidelines: household fuel combustion
Guidelines: content and timeframe

• Key topics:
  – Emissions from range of stove/fuel options
  – Levels of HAP and exposure
  – Health impacts of HAP (including exposure-response for pneumonia, COPD, lung cancer, CVD, etc.)
  – Burns and poisoning
  – Impacts of interventions on HAP/exposure (field studies)

• Due for publication early 2013
Summary

• Large health burden:
  – Nearly 2 million premature deaths from air pollution
  – Many deaths and injuries from burns, scalds and poisoning
  – Injuries/violence in fuel collection

• Important issue for standards to address:
  – Emissions $\rightarrow$ exposure
  – Safety

• WHO Guidelines will provide key evidence:
  – Note process & timeframe in IWA
  – Incorporate new evidence as standards evolve
Thank you!